

AMENDMENTS

This listing of claims will replace all prior versions, and listings, of claims in the application:

In the claims

Claim 1 (Currently amended): A method of controlling a data head for reading data from a data track on a magnetic tape in a magnetic tape drive, comprising:

- determining signal quality for read data signals produced by a data head reading user data from a data track;
- adjusting the position of the data head relative to the data track;
- again determining signal quality for read data signals produced by the data head reading user data;
- determining a change in the signal quality corresponding to the adjustment in data head position; and
- adjusting continuing to adjust the position of the data head relative to the data track using the signal quality, until a predetermined level of improvement in the signal quality is achieved.

Claim 2 (Cancelled):

Claim 3 (Currently amended): The method of ~~claim 2~~ claim 1 wherein ~~changing~~ adjusting the position of the data head comprises:

- stepping of the data head laterally across the data track.

Claim 4 (Currently amended): The method of claim 3, wherein ~~performing the seek operation~~ adjusting the position of the data head further comprises:

- using the determined ~~changes~~ change in signal quality to determine direction and size of ~~steps~~ a step of the stepping.

Claim 5 (Currently amended): The method of claim 4, wherein ~~performing the seek operation further comprises~~ continuing to adjust the data head position comprises:

comparing each of the determined ~~changes~~ change in signal quality to a lower threshold.

Claim 6 (Currently amended): The method of claim 5, wherein ~~adjusting further comprises~~ continuing to adjust the data head position comprises:

maintaining the data head at a current position without stepping when in response to a results result of the comparison ~~indicate~~ indicating that the determined change is below the lower threshold.

Claim 7 (Original): The method of claim 6, wherein the lower threshold comprises a hysteresis value.

Claim 8 (Currently amended): The method of claim 6, wherein ~~adjusting further comprises~~ continuing to adjust the data head position comprises:

monitoring the signal quality while maintaining the data head at the current position to detect any changes in the signal quality greater than the lower threshold; and

if any changes greater than the lower threshold are detected, ~~repeating performing the seek operation~~ again adjusting the data head position and determining the signal quality.

Claim 9 (Currently amended): The method of claim 6, wherein ~~adjusting further comprises~~ continuing to adjust the data head position comprises:

determining that the data head has been maintained at the current position without stepping for a period of time in excess of a predetermined maximum ~~re-seek~~ time threshold; and

~~repeating performing the seek operation~~ again adjusting the data head position and determining the signal quality.

Claim 10 (Currently amended): The method of claim 1, wherein determining signal quality comprises:

obtaining the signal quality from a read channel device.

Claim 11 (Cancelled):

Claim 12 (Original): The method of claim 1, wherein the signal quality comprises error values.

Claim 13 (Original): The method of claim 12, wherein the error values are indicative of errors between observed values and ideal values for the read data.

Claim 14 (Currently amended): An apparatus for controlling a data head to read data from a data track on a magnetic tape in a magnetic tape drive, comprising:

- a computer program in memory for:
 - determining signal quality for read data signals produced by a data head reading user data from a data track; ~~and~~
 - ~~adjusting the position of the data head relative to the data track using the signal quality~~
 - adjusting the position of the data head relative to the data track;
 - again determining signal quality for read data signals produced by the data head reading user data;
 - determining a change in the signal quality corresponding to the adjustment in data head position; and
 - continuing to adjust the position of the data head relative to the data track until a predetermined level of improvement in the signal quality is achieved.

Claim 15 (Currently amended): A tape drive system comprising:

- a data head structure to produce read data signals from user data recorded on a data track of a tape;
- a head stepper coupled to the data head structure;

a data channel unit to produce read data signal quality values from the read data signals; and

a servo controller coupled to the head stepper and the data channel unit, the servo controller being configured to use the signal quality values to control adjustment of the position of the data head structure relative to the data track by the head stepper, wherein the controller adjusts the position of the data head structure relative to the data track until a predetermined level of improvement in the signal quality values is achieved.

Claim 16 (Currently amended): The method of claim 4, wherein ~~performing the seek operation~~ continuing to adjust the position of the data head further comprises:

comparing each of the determined changes to a lower threshold; and

comparing a current number of steps ~~taken by the seek operation~~ to a maximum number of steps.

Claim 17 (Currently amended): The method of claim 16, wherein ~~adjusting~~ continuing to adjust further comprises:

maintaining the data head at a current position ~~without stepping when results in response to a result~~ of the comparison ~~indicate~~ indicating that the determined change is below the lower threshold and the current number of steps taken exceeds the maximum number of steps.

Claim 18 (Previously presented): The method of claim 1, wherein the signal quality relates to noise in the read data signals.

Claim 19 (Previously presented): The method of claim 1, wherein the read data signals do not include servo information.

Claim 20 (Previously presented): The method of claim 1, wherein adjusting comprises aligning the data head with the data track.

Claim 21 (Canceled):

Claim 22 (Currently amended): The apparatus of claim ~~21~~ 14, wherein ~~changing~~ adjusting the position of the data head comprises:
stepping of the data head laterally across the data track.

Claim 23 (Currently amended): The ~~method~~ apparatus of claim 22, wherein ~~performing the seek operation~~ adjusting the position of the data head further comprises:
using the determined changes to determine direction and size of steps of the stepping.

Claim 24 (Currently amended): The ~~method~~ apparatus of claim 23, wherein performing the seek operation further comprises:
comparing each of the determined changes to a lower threshold.

Claim 25 (Currently amended): The apparatus of claim 23, wherein ~~performing the seek operation~~ continuing to adjust the position of the data head further comprises:
comparing each of the determined changes to a lower threshold; and
comparing a current number of steps taken by the seek operation to a maximum number of steps.

Claim 26 (Currently amended): The apparatus of claim 25, wherein adjusting further comprises:
maintaining the data head at a current position ~~without stepping when results in~~ response to a result of the comparison ~~indicate~~ indicating that the determined change is below the lower threshold and the current number of steps taken exceeds the maximum number of steps.

Claim 27 (Currently amended): The apparatus of claim 24, wherein ~~adjusting~~ continuing to adjust the position of the data head further comprises:
maintaining the data head at a current position ~~without stepping when results in~~ response to a result of the comparison ~~indicate~~ indicating that the determined change is below the lower threshold.

Claim 28 (Previously presented): The apparatus of claim 27, wherein the lower threshold comprises a hysteresis value.

Claim 29 (Currently amended): The apparatus of claim 27, wherein ~~adjusting~~
continuing to adjust the position of the data head further comprises:

monitoring the signal quality while maintaining the data head at the current position to detect any changes in the signal quality greater than the lower threshold; and

if any changes greater than the lower threshold are detected, ~~repeating performing the seek operation~~ again adjusting the data head position and determining the signal quality.

Claim 30 (Currently amended): The apparatus of claim 27, wherein ~~adjusting~~
continuing to adjust the position of the data head further comprises:

determining that the data head has been maintained at the current position without stepping for a period of time in excess of a predetermined maximum ~~re-seek~~ time threshold; and

~~repeating performing the seek operation~~ again adjusting the data head position and determining the signal quality.

Claim 31 (Currently amended): The apparatus of claim 14, wherein determining signal quality comprises:

obtaining the signal quality from a read channel device.

Claim 32 (Previously presented): The apparatus of claim 14, wherein the signal quality comprises error values.

Claim 33 (Previously presented): The apparatus of claim 32, wherein the error values are indicative of errors between observed values and ideal values for the read data.

Claim 34 (Previously presented): The apparatus of claim 14, wherein the signal quality relates to noise in the read data signals.

Claim 35 (Previously presented): The apparatus of claim 14, wherein the read data signals do not include servo information.

Claim 36 (Previously presented): The apparatus of claim 14, wherein adjusting comprises aligning the data head with the data track.

Claim 37 (Previously presented): The system of claim 15, wherein the signal quality values relate to noise in the read data signals.

Claim 38 (Previously presented): The system of claim 15, wherein the read data signals do not include servo information.

Claim 39 (Previously presented): The system of claim 15, wherein adjusting comprises aligning the data head structure with the data track.